

WHAT IS CLAIMED IS:

1. A purified or highly pure immunoglobulin having the same specificity as 4G10 monoclonal antibody.

5

2. The purified or highly pure immunoglobulin of claim 1 comprising two light chain components and two heavy chain components wherein said heavy chain components exhibit a single band on gel electrophoresis.

10

3. The purified or highly pure immunoglobulin of claim 1 wherein said immunoglobulin comprises a histidine tag region.

15

4. The purified or highly pure immunoglobulin of claim 3 comprising two light chain components and two heavy chain components wherein said heavy chain components exhibit a single band on gel electrophoresis.

5. The purified or highly pure immunoglobulin of claim 4 wherein said histidine tag is part of the heavy chain component of said antibody.

20

6. The purified or highly pure immunoglobulin of claim 1 further comprising a heavy chain component whose amino acid sequence is substantially the same as the sequence of SEQ ID NO: 4 and a light chain component whose amino acid sequence is substantially the same as the sequence of SEQ ID NO: 5.

25

7. The purified or highly pure immunoglobulin of claim 1 further comprising a light chain component whose amino acid sequence is the sequence of SEQ ID NO: 5 and whose heavy chain component is the sequence of SEQ ID NO: 4.

30

8. The purified or highly pure immunoglobulin of claim 2 further comprising a heavy chain component whose amino acid sequence is substantially the same as the sequence of SEQ ID NO: 6 and a light chain component whose amino acid sequence is the sequence of SEQ ID NO: 5.

5

9. An isolated recombinant polynucleotide encoding a polypeptide of claims 6, 7, and 8.

10. The isolated recombinant polynucleotide of claim 9 wherein said polynucleotide is a cDNA.

11. The complement of claim 9 or 10.

15 12. A vector comprising a polynucleotide of claim 9, 10, and 11.

13. A recombinant cell comprising the vector of claim 12 wherein said cell expresses the polypeptide encoded by the polynucleotide in said vector.

20 14. The recombinant cell of claim 13 wherein said cell also secretes an immunoglobulin.

15. The recombinant cell of claim 14 wherein the expressed polypeptide is an antibody specific for an antigen.

25 16. The recombinant cell of claim 15 wherein said antibodies demonstrate positive reactivity with phosphotyrosine-containing proteins from human cells.

30 17. An immunosorbent material comprising the monoclonal antibodies of claim 2 or claim 4 and a microporous polymeric substrate.

18. The immunosorbent material of claim 17 wherein the substrate is a plurality of beads wherein said beads are no larger than about 100 microns in diameter.

5

19. The immunosorbent material of claim 17 wherein the substrate is a plurality of beads wherein said beads are no larger than about 10 microns in diameter.

10

20. The immunosorbent material of claim 17 wherein the substrate is a plurality of beads wherein said beads are about 5 microns in diameter.

10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

21. The immunosorbent material of claim 18 wherein the substrate is polymerized agarose.

15

22. The immunosorbent material of claim 17 wherein the substrate comprises a metal ligand capable of binding to the histidine-tagged portion of a protein.

20

23. The immunosorbent material of claim 22 further comprising a chemical linkage between said metal ligand and the antibodies of claim 17.

25

24. A method of detecting the presence of phosphotyrosine-containing proteins in a sample comprising the steps of contacting the sample with an antibody of claim 1 or 2 and testing for reactivity wherein a positive reaction demonstrates the presence of a phosphotyrosine-containing protein or polypeptide in said sample.

25. The method of claim 24 wherein the step of testing the sample further comprises contacting the sample with an immunosorbent material which includes the monoclonal antibodies.

5 26. The method of claim 24 wherein the step of testing further comprises testing by a method selected from the group consisting of immunofluorescence, radioimmunoassay, immunoprecipitation, complement fixation, competitive reaction, Western blotting, immunohistochemistry, flow cytometry, and enzyme-linked immunosorbent assay (ELISA).

10 27. A method of producing a purified or highly pure immunoglobulin comprising the steps of:

15 (a) inserting a histidine tag sequence at the C-terminal end of the heavy chain component of an immunoglobulin to be purified to produce a histidine tagged immunoglobulin;

(b) purifying said histidine tagged heavy chain polypeptide by immobilized metal affinity chromatography under neutral conditions and specifically preventing exposure of the immunoglobulin to acidic pH;

20 (c) recovering the purified histidine tagged highly purified immunoglobulin.

28. The method of claim 27 wherein said histidine tagged heavy chain component is produced by expression of a polynucleotide encoding said histidine tagged heavy chain component.

25 29. The method of claim 27 wherein said pH in step (b) is not permitted to go below a pH of 5.0.

30 30. The method of claim 27 wherein said pH in step (b) is not permitted to go below a pH of 6.0.

31. The method of claim 27 wherein the antibody being purified is the antibody of claim 4.

5           32. The immunoglobulin produced by the method of claim 27, 28, 29 or 30.

10

15

20

25

30